

Appl. No. 10/770,619

Reply to Office Action of September 27, 2005

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) An ink jet recording medium comprising a support having thereon a porous layer containing micro particles of ground silica and a hydrophilic binder which is cross-linked with ionizing radiation,

wherein the micro particles of ground silica have an average particle diameter of secondary particles of 10 - 300 nm and a weight ratio of the micro particles of ground silica to the hydrophilic binder in the porous layer is from 2.5:1 to 20:1.

2. (Original) The ink jet recording medium of claim 1, wherein the micro particles of ground silica have an average particle diameter of primary particles of 3 - 50 nm.

3. (Original) The inkjet recording medium of claim 1, wherein said micro particles of ground silica is synthesized with a gel method.

Appl. No. 10/770,619

Reply to Office Action of September 27, 2005

**4. (Original)** The inkjet recording medium of claim 2, wherein said micro particles of ground silica is synthesized with a gel method.

**5. (Currently Amended)** An ink jet recording medium comprising a support having thereon a porous layer containing micro particles of silica and a hydrophilic binder which is cross-linked with ionizing radiation,

wherein a specific surface area measured with BET method of the micro particles of silica is 40 - 100 m<sup>2</sup>/g, and

a coefficient of variation in a primary particle distribution of the micro particles of silica is not more than 0.4 and a weight ratio of the micro particles of ground silica to the hydrophilic binder in the porous layer is from 2.5:1 to 20.1.

**6. (Currently Amended)** An ink jet recording medium comprising a support having thereon a porous layer containing micro particles of silica and a hydrophilic binder being cross-linked with ionizing radiation,

wherein the micro particles of silica are gas phase method silica, and a ratio of isolated silanol groups of the micro

Appl. No. 10/770,619

Reply to Office Action of September 27, 2005

particles of silica is 0.5 - 2.0 and a weight ratio of the micro particles of ground silica to the hydrophilic binder in the porous layer is from 2.5:1 to 20:1.

**7. (Original)** The ink jet recording medium of claim 6, wherein an average particle diameter of primary particles of said gas phase method silica is 5 - 50 nm, and a ratio of isolated silanol groups of the micro particles of silica is 0.5 - 1.5.

**8. (Original)** The ink jet recording medium of claim 1, wherein the hydrophilic binder comprises a polymer which is cross-linked by exposing ionizing radiation to a hydrophilic polymer of a degree of polymerization of at least 500, and a main-chain of the hydrophilic polymer having a plurality of side-chains.

**9. (Original)** The ink jet recording medium of claim 5, wherein the hydrophilic binder comprises a polymer which is cross-linked by exposing ionizing radiation to a hydrophilic polymer of a degree of polymerization of at least 500, and a main-chain of the hydrophilic polymer having a plurality of side-chains.

Appl. No. 10/770,619

Reply to Office Action of September 27, 2005

**10. (Original)** The ink jet recording medium of claim 6, wherein the hydrophilic binder comprises a polymer which is cross-linked by exposing ionizing radiation to a hydrophilic polymer of a degree of polymerization of at least 500, and a main-chain of the hydrophilic polymer having a plurality of side-chains.

**11. (Original)** The ink jet recording medium of claim 8, wherein the hydrophilic polymer is an modified polyvinyl alcohol which is capable of cross-linking by ultraviolet ray, and a modification ratio of the side-chain to the main-chain is 0.01 - 4 mol%.

**12. (Original)** The ink jet recording medium of claim 9, wherein the hydrophilic polymer is an modified polyvinyl alcohol which is capable of cross-linking by ultraviolet ray, and a modification ratio of the side-chain to the main-chain is 0.01 - 4 mol%.

Appl. No. 10/770,619

Reply to Office Action of September 27, 2005

13. (Original) The ink jet recording medium of claim 10, wherein the hydrophilic polymer is an modified polyvinyl alcohol which is capable of cross-linking by ultraviolet ray, and a modification ratio of the side-chain to the main-chain is 0.01 - 4 mol%.

14. (Original) The ink jet recording medium of claim 1, wherein the support is a non water-absorptive support.

15. (Original) The ink jet recording medium of claim 5, wherein the support is a non water-absorptive support.

16. (Original) The ink jet recording medium of claim 6, wherein the support is a non water-absorptive support.

17. (Original) A method for preparing the ink jet recording medium of claim 1, comprising the steps of:

coating on the support an coating composition so as to form a porous layer containing inorganic micro particles and a hydrophilic binder which is capable of cross-linking by

Appl. No. 10/770,619

Reply to Office Action of September 27, 2005

ultraviolet ray;

exposing ultraviolet ray to the porous layer by employing a metal halide lamp which has primary emission wavelength of 300 - 400 nm; and

drying the porous layer,

wherein the ultraviolet ray has an irradiation energy at a wavelength of 350 nm of 1 - 100 mJ/cm<sup>2</sup>.

**18. (Original)** A method for preparing the ink jet recording medium of claim 5, comprising the steps of:

coating on the support an coating composition so as to form a porous layer containing inorganic micro particles and a hydrophilic binder which is capable of cross-linking by ultraviolet ray;

exposing ultraviolet ray to the porous layer by employing a metal halide lamp which has primary emission wavelength of 300 - 400 nm; and

drying the porous layer,

wherein the ultraviolet ray has an irradiation energy at a wavelength of 350 nm of 1 - 100 mJ/cm<sup>2</sup>.

Appl. No. 10/770,619

Reply to Office Action of September 27, 2005

**19. (Original)** A method for preparing the ink jet recording medium of claim 6, comprising the steps of:

coating on the support an coating composition so as to form a porous layer containing inorganic micro particles and a hydrophilic binder which is capable of cross-linking by ultraviolet ray;

exposing ultraviolet ray to the porous layer by employing a metal halide lamp which has primary emission wavelength of 300 - 400 nm; and

drying the porous layer,

wherein the ultraviolet ray has an irradiation energy at a wavelength of 350 nm of 1 - 100 mJ/cm<sup>2</sup>.

**Claim 20 (Cancel).**

**21. (Previously Presented)** The ink jet recording medium of claim 1, wherein a weight ratio of the micro particles of ground silica to the hydrophilic binder in the porous layer is from 5